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gemini



OPERATIONS MANUAL
BEDIENUNGSHANDBUCH
MANUAL DEL OPERADOR
MANUEL D'INSTRUCTIONS

X1/X2/X3/X4

POWER AMPLIFIER

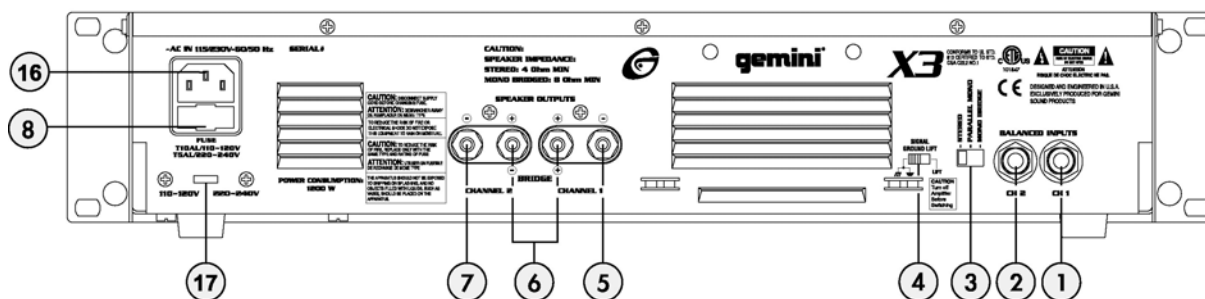
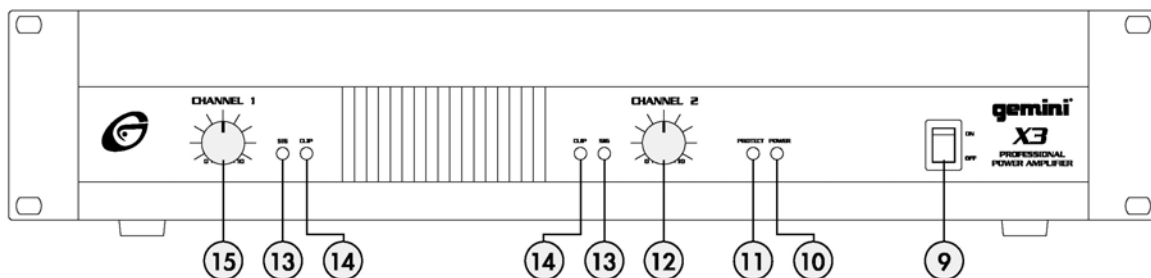
STEREO VERSTÄRKER

AMPLIFICADOR DE PODER ESTEREO

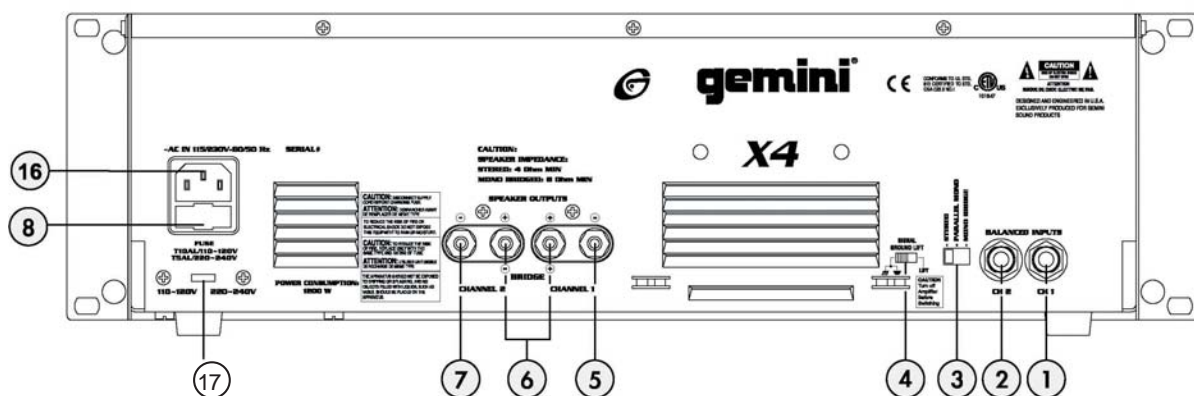
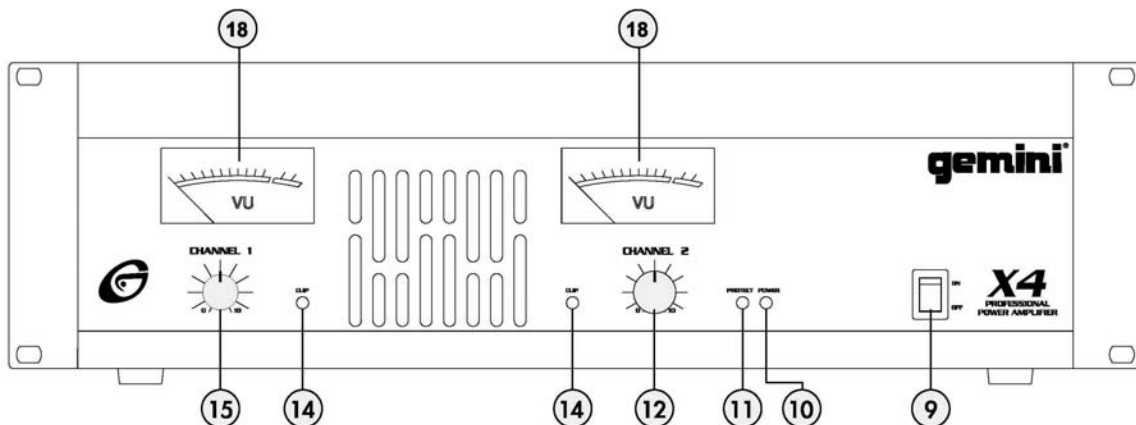
AMPLIFICATEUR DE PUISSANCE STÉRÉO



X1 / X2 / X3



X4



INTRODUCTION:

Congratulations on purchasing a **Gemini Power Amplifier**. This state-of-the-art power amplifier includes the latest features and is backed by a **three year limited warranty**. Prior to use, we suggest that you carefully read all the instructions.

FEATURES:

- State-of-the-art bi-polar output stage technology for the finest sound quality and reliability
- High output power to drive professional loudspeakers without clipping
- Comprehensive protection circuitry (Short Circuit, DC, Thermal Cut-off, Sub/Ultrasonic Frequency Filters, Turn-on Delay, Main Fuse, Secondary DC Fuses)
- Three modes of operation - stereo, parallel mono and mono bridge
- Active 1/4" Jack balanced/unbalanced inputs
- Ground lift switch for flexibility in installations
- Signal LEDs and Clip LED for better control on X1, X2, X3 amplifiers
- Large VU-meters and Clip LED for better control on X4 amplifier
- Efficient dual aluminum extrusion heatsink design with directly mounted output transistors for no-fault operation
- Efficient air guide with front-to-rear airflow for thermal stability and reliability
- Compact 2U well balanced enclosure (3U for X4 model)
- Steel reinforced chassis construction for durability and longevity

CAUTIONS:

1. Read all operating instructions before using this equipment.
2. To reduce the risk of electrical shock, do not open the unit. There are **NO USER REPLACEABLE PARTS INSIDE**. Please contact the Gemini Service Department or your authorized dealer to speak to a qualified Gemini Sound Products technician.
3. Be sure to allow adequate front and rear ventilation to avoid possible heat damage to your equipment.
4. Be sure that **AC** power is **OFF** and all level controls are set to **MINIMUM** before making connections. This will eliminate any chance of unexpected, loud audio transients that could damage your speaker systems.

In the USA: If you experience problems with this unit, please call 1 (732) 738-9003 for Gemini Customer Service. Do not attempt to return this equipment to your dealer.

5. Be sure that **AC** power is **OFF** when changing modes of operation and when changing the position of the **Ground Lift Switch**.
6. **DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE**. Operators of electronic equipment should in no way be in contact with water.
7. When connecting to **AC** power line be sure you haven't lost the ground connection by using an adapter or extension cord without a **3** prong plug.
8. **DO NOT USE ANY SPRAY CLEANER OR LUBRICANT ON ANY CONTROLS OR SWITCHES**.

CONNECTION, CONTROLS AND INDICATORS:

REAR PANEL INPUT SECTION:

1/4" INPUT JACKS: **1/4" INPUT JACKS (1, 2)** accept a balanced as well as an unbalanced line level signal. The unbalanced line uses a standard tip-sleeve connection. The tip is positive and the sleeve is negative or ground. The balanced line uses a tip-ring-sleeve connection. The tip is hot or **positive (+)**, the ring is cold or **negative (-)**, and the sleeve is shield or ground.

OPERATION MODE SWITCH: **OPERATION MODE SWITCH (3)** switch is used to set the unit for **Stereo** mode, **Parallel Mono** mode or **Mono Bridge** mode.

AC POWER SECTION:

FUSE: Replace **FUSE (8)** with those of proper type and rating.

GROUND LIFT SWITCH : **GROUND LIFT SWITCH (4)** is used to lift the balanced input connectors' ground/shield from the amplifier's ground. When the signal ground lifted, the sound source disconnects from the amplifier's ground preventing ground loops which can generate hum and noise. See the **Ground Lift Switch Instructions** for more detail.

AC INLET: **AC INLET (16)** is used to attach the power cord to the unit.

AC LINE VOLTAGE SWITCH: **AC LINE VOLTAGE SWITCH (17)** allows reconfiguring amplifier for either **110-120V** or **220-240V AC** lines.

OUTPUT SECTION:

Disconnect unit from the **AC** power source before making any connections. Pay close attention to polarity (**shown on the back of the unit**) when connecting your speakers. Connecting your speaker systems using the wrong polarity will not damage your speakers, but will impact the quality of the sound (**lack of bass and incorrect stereo image**).

SPEAKER OUTPUTS: The **SPEAKER OUTPUT (5,6,7)** connectors are 3-way binding posts that will accept a standard banana plug, spade lugs, or bare wire. Make sure that all the connections are clean when using bare wire connections. If any strands of wire from one connector touch the adjacent connector, the sound will distort, and your amplifier will overheat and go into protection mode.

NOTE: TOTAL SPEAKER IMPEDANCE MUST NOT BE LOWER THAN 4 OHM PER CHANNEL FOR STEREO AND PARALLEL MONO MODES, AND 8 OHM FOR MONO BRIDGE MODE.

FRONT PANEL:

POWER SWITCH: The **POWER SWITCH (9)** turns the unit on and off.

POWER LED: The **POWER LED (10)** lights when the power is on. If the **POWER LED (10)** does not light, refer to the troubleshooting guide.

SIGNAL LED: The **SIGNAL LED (13)** for each channel show when a signal is present. In **Mono Bridge** mode, both the **Channel 1 LED** and the **Channel 2 LED** will light in unison.

CLIP LED: The amplifier has true **CLIP LED (14)** to help you properly control the amplifier's output and achieve undistorted sound. The **CLIP LED (14)** for each channel light when your signal level is so strong that the distortion reaches 1% THD. The **CLIP LED (14)** should not remain constantly on or flash repeatedly during operation. For clean sound reproduction, the **CLIP LED (14)** should only light occasionally for an instant. If the **LED** remains on or flashes repeatedly, you will hear distorted sound that can be damaging to your speaker systems. If this occurs, reduce the signal level by lowering the input level control for the channel that is clipping or reduce the level at the source. If the **CLIP LED (14)** lights when no signal is present, it may indicate an **RF** signal on the output which may cause damage to speakers (**the RF signal will not be audible**). Please note that when you are using the amplifier in the **Mono Bridge** mode, both **CLIP LED (14)** of the bridged channels will operate simultaneously.

PROTECT LED: When you first turn on the amplifier, the **PROTECT LED (11)** light briefly during a turn-on delay which indicates that the outputs are disconnected internally. There will be an audible click when the outputs reconnect and the **PROTECT LED (11)** will turn off. Otherwise, the **PROTECT LED (11)** indicates that there is a problem either in the amplifier's external connections, load or temperature conditions or its internal functions. If one of these situations occurs, the amplifier senses the problem and automatically switches into protection mode. The **LED** will light to warn you of the trouble and the amplifier will stop working. If this occurs, switch off the amplifier and refer to the **Troubleshooting Guide**. If the **PROTECT LED (11)** remains lit when resuming amplifier operation, do not use the amplifier and contact an authorized service technician.

LEVEL CONTROLS: **LEVEL CONTROLS (12,15)** establish the input levels required for each channel. Only the **Channel 1 LEVEL CONTROL (15)** works in **Mono Bridge** mode.

OPERATION:

STEREO OPERATION:

THE AMPLIFIER'S POWER MUST BE TURNED OFF WHEN CHANGING MODES OF OPERATION.

The unit has two channels for stereo operation. Each channel provides a separate and discrete signal at the speaker outputs according to the signal received at the inputs. The following instructions are for applications with **4 Ohm** or **8 Ohm** speakers of matched power ratings.

1. With the power off, set the **OPERATION MODE SWITCH (3)** to the **STEREO** position.
2. With the power off, connect your input cables to the **Channel 1** and **2** inputs using the **1/4" INPUT JACKS (1, 2)** of each channel.

3. Connect the loudspeakers to the **Channel 1** and **Channel 2 SPEAKER OUTPUTS (5,7)**. **THE TOTAL SPEAKER LOAD MUST BE AT LEAST 4 OHMS PER CHANNEL**. If you try to operate at a lower impedance, the amplifier will go into protection mode and stop operation until you correct the load conditions.
4. With the **LEVEL CONTROLS (12,15)** of both channels set to zero (fully counterclockwise), turn the **POWER SWITCH (9)** on. Apply a signal to the input of the amplifier. The level of the input signal should be as high as you will ever need it to be. This way, it will be as high above the amplifier's noise floor as possible, ensuring an excellent performance and signal to noise ratio. Adjust the **LEVEL CONTROLS (12,15)** for each channel to achieve the desired maximum listening level. Note, when the **CLIP LED (14)** light, there is distortion present in the amplifier's output section. If a **CLIP LED (14)** remains on or flashes repeatedly, reduce the signal level by lowering the input level control for the channel that is clipping or reduce the level at the source.

PARALLEL MONO OPERATION:

Follow these instructions for **Parallel Mono** Operation using a single input cable, and you will have the same monophonic signal on both the **Channel 1** and the **Channel 2** outputs. Each channel's output is controlled independently by that channel's level control.

1. With the power off, set the **OPERATION MODE SWITCH (3)** to the **Parallel Mono** position.
2. With the power off, connect your input cables to the **Channel 1** input only using the **1/4" INPUT JACK (1)** of **Channel 1**.
3. Connect the loudspeakers to the **Channel 1** and **Channel 2 SPEAKER OUTPUTS (5, 7)**. **THE TOTAL SPEAKER LOAD MUST BE AT LEAST 4 OHMS PER CHANNEL**. If you try to operate at less than 4 Ohms per channel, the amplifier will go into the protection mode and stop operation until you correct the load conditions.
4. With the **LEVEL CONTROLS (12,15)** set to zero (fully counterclockwise), switch the **POWER (9)** on. Apply a signal to the input. The level of the input signal should be as high as you will ever need it to be. This way, it will be as high above the amplifier's noise floor as possible, ensuring an excellent performance and signal to noise ratio. Adjust the **LEVEL CONTROLS (12,15)** for each channel to achieve the desired maximum listening level. Note, when the **CLIP LED (14)** light, there is distortion present in the amplifier's output section. If a **CLIP LED (14)** remains on or flashes repeatedly, reduce the signal level by lowering the input level control for the channel that is clipping or reduce the level at the source.

MONO BRIDGE OPERATION:

Follow these instructions to bridge the unit's output. Bridging the amplifier converts the unit to a monophonic or single channel amplifier . The amplifier can be used with **8 Ohm** or higher loads only in **Mono Bridge** mode. This mode is used to provide a higher voltage with greater headroom to your speaker. Before setting your amplifier for **Mono Bridge** operation, make sure that your speaker can handle the high power level provided by the amplifier in **Mono Bridge** mode.

CAUTION: VOLTAGE OVER 100 VOLTS MAY BE PRODUCED AT THE BRIDGE OUTPUT TERMINALS IN THIS MODE.

1. With the power off, set the **OPERATION MODE SWITCH (3)** to the **BRIDGE** position.
2. With the power off, connect your input cables to **Channel 1** input only using the **1/4" INPUT JACK (1)** of channel 1.
3. Connect the loudspeaker to the **BRIDGE SPEAKER OUTPUT (6)** only. Be sure the polarity of your connection is correct. The total speaker load must be at least **8 Ohms** or above. If you try to operate at less than **8 Ohms** in the **Mono Bridge** mode, the amplifier will go into the protection mode and stop operation until you correct the load conditions.

4. With the **Channel 1 LEVEL CONTROL (15)** set to zero (fully counterclockwise), switch the power on. Apply a signal to the input. The level of the input signal should be as high as you will ever need it to be. This way, it will be as high above the amplifier's noise floor as possible, ensuring an excellent performance and signal to noise ratio. Adjust the **LEVEL CONTROL (15)** for **Channel 1** to achieve the desired maximum listening level. Note, when the **CLIP LED (14)** light, there is distortion present in the amplifier's output section. If a **CLIP LED (14)** remains on or flashes repeatedly, reduce the signal level by lowering the input level control for **Channel 1** or reduce the level at the source. During **Mono Bridge** operation, the **Channel 2** level is inactive, however, both channels' **LED** will flash simultaneously and show output conditions.

USING THE GROUND LIFT SWITCH:

Depending on your system configuration, sometimes applying the ground will create a quieter signal path. Sometimes lifting the ground can eliminate ground loops and hum to create a quieter signal path.

1. With the power amp on, listen to the system in idle mode (no signal present) with the ground applied (the **GROUND LIFT SWITCH (4)** in the left position).
2. Turn the power off before moving the **GROUND LIFT SWITCH (4)**. Lift the ground by moving the **GROUND LIFT SWITCH (4)** to the right, turn the power back on and listen to determine which position will provide a signal free of background noise and hum. Keep the **GROUND LIFT SWITCH (4)** in the ground position if the noise level remains the same in either position.

CAUTION: DO NOT TERMINATE THE AC GROUND ON THE POWER AMPLIFIER IN ANY WAY. TERMINATION OF THE AC GROUND CAN BE HAZARDOUS.

SPECIFICATIONS:

	X1	X2	X3	X4
Output Power EIA:.....1kHz @ 1% THD, Wrms				
Both Channels Driven 8Ω	85	140	200	200
Both Channels Driven 4Ω	110	200	300	300
Mono Bridge 8Ω	220	400	600	600
Dynamic Headroom, dB:				
At8Ω	1.4	1.5	1.6	1.6
At4Ω	1.9	2.0	2.2	2.2
Frequency Response.....	30 Hz - 50 kHz			
Total Harmonic Distortion.....	less than 0.05%, typical 0.02% @ 1 kHz			
Signal to Noise ratio.....	100 dB below rated power @ 8Ω			
Damping factor.....	greater than 200 @ 8Ω			
Slew rate.....	20 V/μS			
Voltage gain, dB	28	30	32	32
Input Sensitivity (for rated power at 8Ω).....	1 Vrms			
Input Impedance Unbalanced.....	10 kΩ			
Input Impedance Balanced.....	20 kΩ			
Power consumption, W	500	800	1200	1200
(at rated power at 4Ω, both channels driven)				
AC Power Requirements.....	110-120 V / 60 Hz and 220-240 V / 50 Hz			
Indicators:.....	1 Power LED			
.....	1 Protect LED			
.....	1 Signal LED per Channel (for X1, X2, X3)			
.....	1VU-meter per Channel (for X4)			
Cooling.....	Fan, Front-to-Rear Forced Air			
Protection:.....	Short Circuit, DC, Thermal Cut-off,			
.....	Sub/Ultrasonic Frequency Filters,			
.....	Turn-on Delay, Main Fuse, Secondary DC Fuses			
Connectors:				
Balanced/Unbalanced Inputs.....	1/4" Jack			
Speaker Outputs.....	5-way Binding Posts			
Dimensions:				
X1, X2, X3.....	19"W x 10.75"D x 3.5"H (483 x 273 x 89 mm)			
X4.....	19"W x 10.75"D x 5.25"H (483 x 273 x 133 mm)			
Weight	16.3 lbs	17.8 lbs	20.2 lbs	21.6 lbs
	7.4 kg	8.1 kg	9.2 kg	9.8 kg

SPECIFICATIONS AND DESIGN ARE SUBJECT TO CHANGE WITHOUT NOTICE FOR PURPOSE OF IMPROVEMENT

SYMPTOM	CAUSE	SOLUTION
UNIT DOES NOT PRODUCE SOUND. POWER LED DOES NOT LIGHT.	<ul style="list-style-type: none"> • POWER SWITCH NOT IN ON POSITION. • POWER CABLE NOT CONNECTED TO AMPLIFIER OR TO OUTLET. • AC OUTLET NOT ACTIVE. • MAIN AMPLIFIER FUSE DEFECTIVE. 	<ul style="list-style-type: none"> • MOVE POWER SWITCH TO ON POSITION. • CONNECT POWER CABLE TO AC SUPPLY. • CHECK CONDITION OF OUTLET. • REPLACE AMPLIFIER MAIN POWER FUSE ON REAR PANEL WITH CORRECT TYPE AND RATING.
POWER LED LIGHTS, BUT NO SOUND IS PRODUCED BY AMPLIFIER.	<ul style="list-style-type: none"> • NO INPUT SOURCE SIGNAL. • INPUT SOURCE NOT CONNECTED. • INPUT CONNECTING CABLE DEFECTIVE. • SPEAKER(S) NOT CONNECTED. • SPEAKER CABLE DEFECTIVE. • SPEAKER SYSTEM(S) INOPERATIVE. • AMPLIFIER'S LEVEL CONTROLS ARE SET TO ZERO. 	<ul style="list-style-type: none"> • CHECK FOR PROPER FUNCTION OF INPUT SOURCE DEVICE. • CHECK INPUT CABLES AND CONNECTIONS. REPLACE QUESTIONABLE CABLES WITH KNOWN GOOD CABLES. • CHECK SPEAKER CABLES AND CONNECTIONS. REPLACE QUESTIONABLE CABLES WITH KNOWN GOOD CABLES. • CHECK OPERATING CONDITION AND STATUS OF SPEAKER SYSTEM(S). BE SURE THE LEVEL CONTROLS ARE PROPERLY SET.
SOUND IS PRESENT BUT VOLUME IS TOO LOW EVEN THOUGH SOURCE DEVICE IS SET TO A HIGH LEVEL.	<ul style="list-style-type: none"> • AMPLIFIER INPUT LEVEL CONTROLS ARE SET TOO LOW. • WRONG PIN CONNECTIONS IN CABLES. 	<ul style="list-style-type: none"> • ADJUST LEVEL CONTROLS AS PER INSTRUCTIONS. • USE CORRECT CABLES (AS SHOWN ON BACK OF UNIT).
VERY LITTLE OR NO OUTPUT FROM SUBWOOFER OR NO BASS FROM FULL RANGE SPEAKERS WHEN OPERATING WITHOUT SUBWOOFERS.	<ul style="list-style-type: none"> • FREQUENCY SWITCH IS IN THE FULL RANGE MODE POSITION. 	<ul style="list-style-type: none"> • MOVE THE FREQUENCY SWITCH TO THE 120 HZ OR THE 180 HZ POSITION.
LOUD 50/60 HZ OR 100/120 HZ HUM IS HEARD AT ALL TIMES THROUGH THE SPEAKER SYSTEMS.	<ul style="list-style-type: none"> • IMPROPER OR DEFECTIVE GROUND CONNECTION AT INPUTS. IMPROPER OR DEFECTIVE GROUND AT INPUT SOURCE DEVICE(S). • IMPROPER OR DEFECTIVE GROUND CONNECTION ON AC OUTLET. • GROUND LOOP THROUGH AC LINE CONNECTION/RACK MOUNTING. 	<ul style="list-style-type: none"> • CHECK FOR PROPER AC LINE GROUND ON POWER AMP AND ALL INPUT DEVICES. • CHECK INPUT CABLES FOR ALL SOURCE DEVICES AND SIGNAL PROCESSING AS WELL AS INPUT CABLES TO POWER AMPLIFIER. CHECK POSITION OF GROUND LIFT SWITCH AS PER INSTRUCTIONS FOR LIFTING THE GROUND. • NEVER LIFT THE AC LINE GROUND ON THE POWER AMPLIFIER. IF YOU ARE NOT TOTALLY FAMILIAR WITH GROUND LIFTING OR UNIFICATION PROCEDURES, DO NOT ATTEMPT THEM WITHOUT FIRST CONSULTING YOUR DEALER OR A QUALIFIED SOUND TECHNICIAN FOR MORE INFORMATION ON GROUNDING. IMPROPERLY DONE, SUCH PROCEDURES CAN POSE A SAFETY AND/OR FIRE HAZARD.
SOUND IS DISTORTED.	<ul style="list-style-type: none"> • DISTORTION OCCURRING IN SOURCE DEVICE. • INPUT LEVEL IS SET TOO HIGH. 	<ul style="list-style-type: none"> • CHECK CLIP INDICATORS ON INPUT SOURCE DEVICES AND RESET LEVELS IF NECESSARY TO ELIMINATE DISTORTION. • ADJUST LEVEL CONTROLS AS PER INSTRUCTIONS.
PROTECT LED REMAINS LIT OR GOES ON AND OFF INTERMITTENTLY AFTER USING AMPLIFIER FOR A SHORT TIME.	<ul style="list-style-type: none"> • UNIT IS OPERATING AT EXCESSIVELY HIGH TEMPERATURE. • EXTREMELY LOW SPEAKER IMPEDANCE. • SHORT IN SPEAKER CONNECTORS, SPEAKER CABLE OR SPEAKER SYSTEM. 	<ul style="list-style-type: none"> • CHECK THAT AMPLIFIER IS ADEQUATELY VENTILATED ON THE FRONT AND REAR PANELS WHERE THE AIR VENTS AND FANS ARE LOCATED. IF OVERHEATED, LET THE AMPLIFIER COOL DOWN BEFORE APPLYING AN INPUT SIGNAL. • VERIFY SPEAKER SYSTEM IMPEDANCES. BE SURE THE TOTAL SPEAKER SYSTEM IMPEDANCE IS AT LEAST 4 OHM PER CHANNEL FOR CHANNELS A AND B, AND AT LEAST 2 OHM FOR THE SUBWOOFER CHANNEL. IF YOU ARE NOT SURE OF YOUR TOTAL SPEAKER IMPEDANCE LOAD, CONTACT YOUR DEALER FOR MORE INFORMATION. • CHECK CONDITION OF SPEAKER CABLES. • IF USING BARE WIRE CONNECTIONS ON THE OUTPUTS OF THE AMPLIFIER, BE SURE THAT NO STRANDS FROM ONE CONNECTOR ARE TOUCHING ANY OTHER CONNECTOR.
FUSE BLOWS INTERMITTENTLY.	<ul style="list-style-type: none"> • SPEAKER LOAD IMPEDANCE IS TOO LOW. • TYPE OR RATING OF THE FUSE IS NOT CORRECT. 	<ul style="list-style-type: none"> • CHECK FOR SHORTS ON THE OUTPUTS. • CHECK YOUR SPEAKER IMPEDANCE (INFO FROM DEALER). • CHECK THAT THE FUSE TYPE AND RATING IS CORRECT.
PROTECT LED(S) STAY ON WITH NO SPEAKERS CONNECTED AND WITH THE AMPLIFIER COOLED DOWN.	<ul style="list-style-type: none"> • FAILED AMPLIFIER. 	<ul style="list-style-type: none"> • CONTACT THE GEMINI SERVICE DEPARTMENT OR YOUR AUTHORIZED DEALER TO SPEAK TO A QUALIFIED SERVICE TECHNICIAN. IN THE U.S.A. CALL 1-732-738-9003

NOTES:



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**In the USA: If you experience problems with this unit,
call 1-732-738-9003 for Gemini Customer Service.**

Do not attempt to return this equipment to your dealer.

Parts of the design of this product may be protected by worldwide patents.

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